ESA-014 Final Public Report

Introduction:

ESA-014 at the Tembec St. Francisville plant was held on March 27-29, 2006.

Objective of ESA:

To reduce operating costs by reducing the amount of natural gas consumed in the boilers and steam systems.

Focus of Assessment: Steam.

Approach for ESA: ESA-014 was held on March 27-29, 2006. Because of the teaching commitment of the ESA Specialist, the training focused on modeling the DOE tools and running the potential projects on the first day (March 27), homework and finalizing projects to review on the second day (March 28), and finalizing the recommendations and producing the preliminary report and findings on the third day (March 29).

General Observations of Potential Opportunities:

- Indicate total plant natural gas cost for base year, 2005 about $7/MMBtu
- Indicate impact fuel cost in $/MMBtu, impact electrical cost in cents/kWh if necessary for ESA using $8/MMBtu for natural gas.

Before the start of the assessment, with discussions with Mr. Broussard, I felt that the best opportunities for fuel savings are fuel switching and/or improving the natural gas consumption by improving the boiler efficiency (use of economizers and frequent tuning, etc.). During the assessment, I learned that fuel switching to petroleum coke (which is starting to be practiced by several nearby plants) is and continues to be studied by Corporate. However, because of the cost associated with a new boiler and other hardware required, this will not be a focus of this assessment.

- Also, (assuming the continuation of the Louisiana IAC), I recommend that this plant have a one-day assessment to specifically look at air and lighting. The Louisiana IAC has already scheduled the remaining days for the center for FY05, so this would have to be part of the FY06 program. Since steam is covered in this assessment a single day of IAC assessment could assist this plant with reducing air and electrical usage thereby saving more operating money—several ideas were discussed with the ESA specialist. There are possibilities of significant savings available here—but it is not part of the steam system.

- Note what you would expect would be Near Term, Medium Term, Long Term opportunities. See definitions below:

  - Near term opportunities would include actions that could be taken as improvements in operating practices, maintenance of equipment or relatively low cost actions or equipment purchases.
    1. Improve steam trap maintenance program (project 16). Even though this plant already incorporates some best practice trap maintenance programs, several faulty traps were noted by the plant assessment team during this assessment. This is a best practice because maintenance is done at just about every shutdown. However a few faulty traps were noted.
    2. Improve steam leak maintenance program (project 17). Even though this plant already incorporates some best practice leak maintenance programs, several leaks were noted by the plant assessment team during this assessment. The leaks noted were small and had not been worked since the last shutdown
  - Medium term opportunities would require purchase of additional equipment and/or changes in the system such as addition of recuperative air preheaters and use of energy to substitute current practices of steam use etc. It would be necessary to carryout further engineering and return on investment analysis.
    1. Reduce steam usage or demand (project 1). This is and will continue to be an ongoing project at the plant. This has been an ongoing project for several months. Several uses of steam that can be eliminated have been noted and should be made within the year. The overall goal of these projects is to reduce medium pressure steam demand by 25Klbs/hr and low pressure steam demand by 75Klbs/hr. The plant and corporate personnel believe these goals are achievable within two year by improving the plant operating efficiency. The projects involve re-routing some existing steam lines and the cost has been included in the implementation estimate. Further details of the reduced steam demand were not made to the ESA specialist because of the proprietary method of rework to the company operation. However, plant personnel assure me that they should be able to achieve at least these savings.
    2. Improve boiler efficiency (project 3). Although the overall efficiency is relatively high, several changes can improve the efficiency even more—the target should be 85%. The methods suggested include installation of a boiler economizer (pre-heating the boiler feed water with waste heat, properly tuning

and maintaining the burners during shut-down periods (at least annually or semi-annually), and perhaps the installation of a continuous readout of the efficiency and O_2 gas in the waste heat system.

3. Change boiler blowdown rate (project 4). This will require the installation of an automatic blowdown controller and continuously monitoring the steam purity.
4. Improve condensate recovery (project 13). This work will be the result of a number of on-going projects (some of which are small and some of which will require more effort. At the time of the writing of this report probably one-half are already in the works.

- Long term opportunities would require testing of new technology and confirmation of performance of these technologies under the plant operating conditions with economic justification to meet the corporate investment criteria.
    1. None noted—however, the plant needs to continue to study the possibility of fuel switching should the situation of capital and availability change.

- Estimate, if possible, % plant natural gas savings from a) Near Term opportunities; b) Medium Term opportunities, c) Long Term opportunities.
    - Near term savings--$99,000 of natural gas (13,625 MMBtus) at a capital and expense cost range of $25,000 to $55,000. 0.34% of the natural gas used.
    - Medium term savings--$10,416,000 of natural gas (1,300,200 MMBtus) at a capital and expense cost range of $5,620,000 to $11,340,000. 32.51% of the natural gas used.
    - Long term savings—none noted.

Management Support and Comments: Findings from the assessment have helped confirm some of the projects that personnel have been working on. Quantifying the benefits in an interactive model is superior to standalone project economics.

DOE Contact at Plant/Company: (who DOE would contact for follow-up regarding progress in implementing ESA results.)

Mr. Maurice Broussard
225-336-2606